Space Weather Forecast

Issued on Saturday, 06 November 2021 at 12:25 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of Moderate class flares. Chance of isolated G1/Minor geomagnetic storms on days 1 and 2. Active electron fluence likely by days 3 and 4.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: There are currently three numbered regions on the visible disc. A small and simple spot in the in the northwest, a moderately sized unipolar spot near centre disk, and a new relatively active region that rotated around the southeast limb. A further active region is just beginning to show it's leading edge at the northeast horizon, though remains spotless at present. This may become a source of increased flare activity as it rotates further into view. Two small Common class and several background class flares were evident in the last 24 hours, mostly from the southeast limb.

No Earth-directed coronal mass ejections have been seen in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind speed reduced from Strong to Elevated by 05/2230 UTC, then rose to Strong again by 06/0130 UTC likely due to a glancing blow from a weak CME that left the Sun on the 2nd Nov. Solar winds have since gradually declined back to Elevated. The interplanetary magnetic field IMF, Bt, was mostly weak, but with an increase to Moderate between 05/2330-06/0030 UTC. The north-south component was mostly weak, but with a period of Moderately positive between 05/2330-06/0010 UTC. Unsettled geomagnetic levels dominated through the period with two Active intervals, one at the start of the period and one after midnight UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has returned to background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to remain mainly Low through the next four days, but with a continuing slight chance of Moderate class flares.

Solar Wind / Geomagnetic Activity: Solar wind speeds are expected to continue Elevated for the remainder of day 1 (6th), but with a possible connection to coronal hole 17 late on day 1 or day 2 (6th or 7th), possibly increasing solar wind speeds back up to Strong. Generally Unsettled geomagnetic activity is expected through much of the period, but perhaps with an increased chance of Active to G1/Minor Storm intervals from late day 1 into day 2 (6th/7th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be close to background levels.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	40	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	15	15	15
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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